MISSOURI BOTANICAL GARDEN

Bulletin

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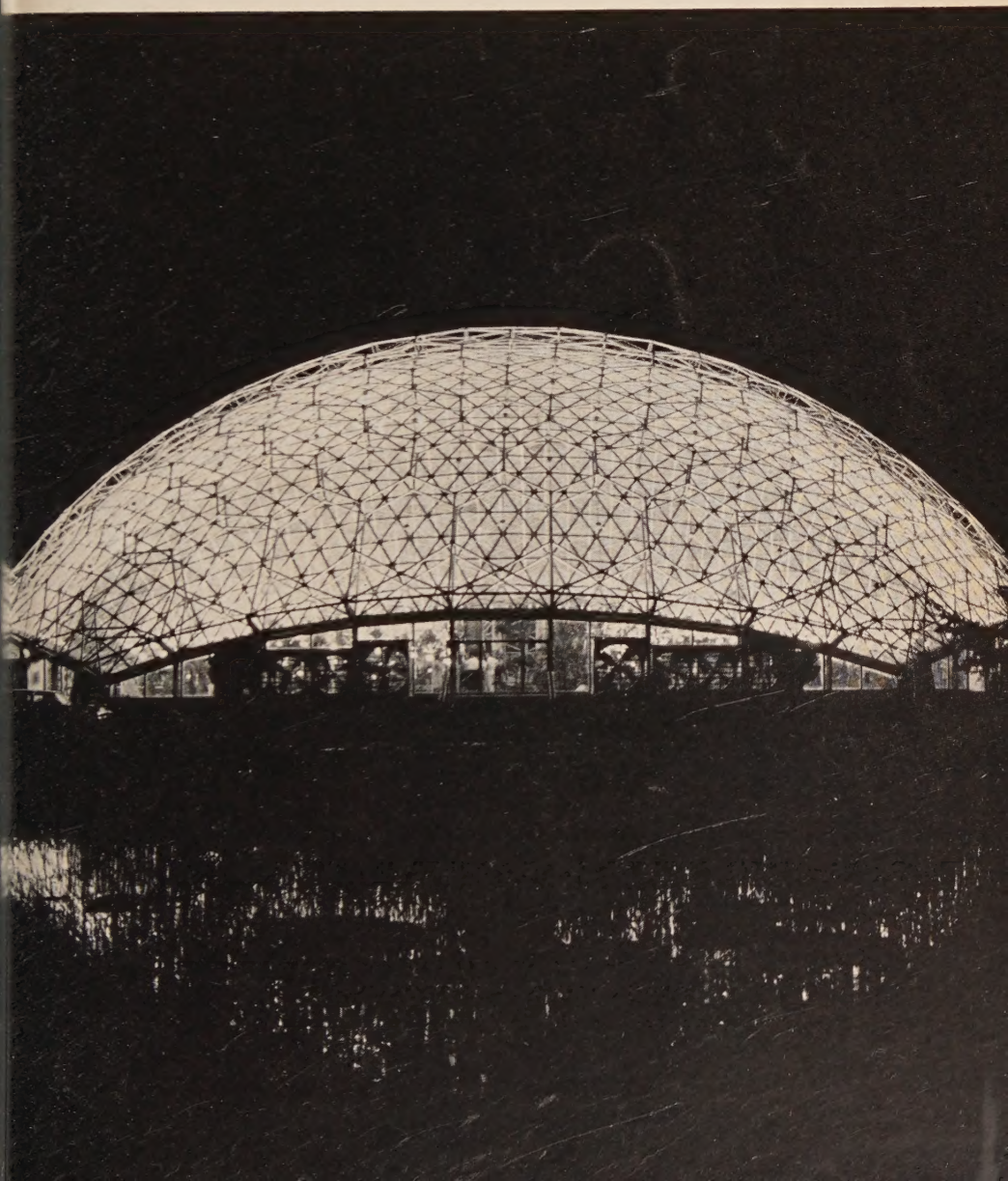

COVER: CLIMATRON AT NIGHT. One of the first photographs of the Climatron at night, with 100,000 watts of illumination, transforming it into a new landmark for St. Louis.

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Missouri Botanical Garden Bulletin

Vol. XLVIII No. 8 OCTOBER 1960

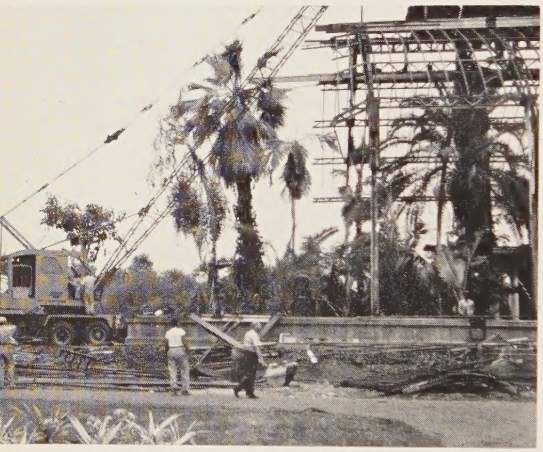
THE CLIMATRON OPENS TO THE PUBLIC

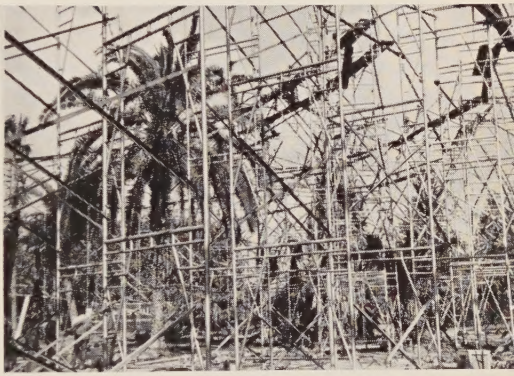
WHEN ground was broken in the early summer of 1959 for the "new dome" conservatory, it didn't even have a name. It was only after some weeks that the name *Climatron*, coined by Dr. Went to emphasize the climate control functions of the new house, was chosen. The nameless state of the new project was perhaps somewhat symbolic of the undertaking at its beginnings.

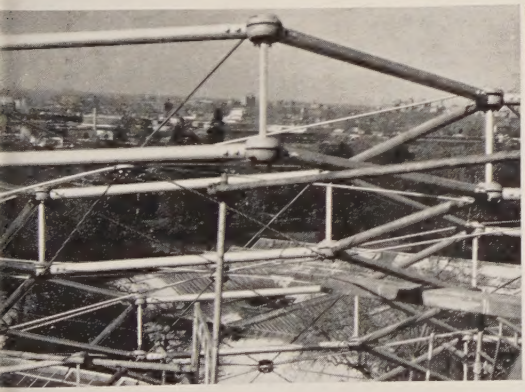
Those early days of the Climatron *were* characterized by the uncertainty and trial and error approach that is a proper part of all pioneering. After all, we were building not just a new greenhouse for Shaw's Garden—we were inventing a radical, new kind of facility, never before even tried anywhere in the world, for a radically new approach to the growth and display of tropical plants. We were also in a roaring, tearing hurry. At the beginning, it was intended to enclose the structure with a flexible, clear plastic skin, hung like a tent from the aluminum tube framework. It was known that the framework could be erected very fast (and it was—in about six weeks) and it was hoped that the skin could be hung in a similarly short time, and that therefore the building could be enclosed before the first frost. Then came the first severe blow. No plastic manufacturer could guarantee a clear, flexible skin to stand up under sun and weather for more than a year or two. A hard decision faced the Director and the architect—go ahead with the skin, and take a chance that it would hold up, and thus protect the palms, or risk losing the palms to freezing weather in order to insure that the enclosure would be permanent. They decided that the Garden could not prudently invest in a skin that might decay in a year or two, and thus present the same problem all over again. So a new start was made on the enclosure. This resulted in the decision to use rigid plexiglass panels set in neoprene gaskets supported by the aluminum framework, that presents the Climatron as you now see it. The immediate present—and the palms—were sacrificed to the future.

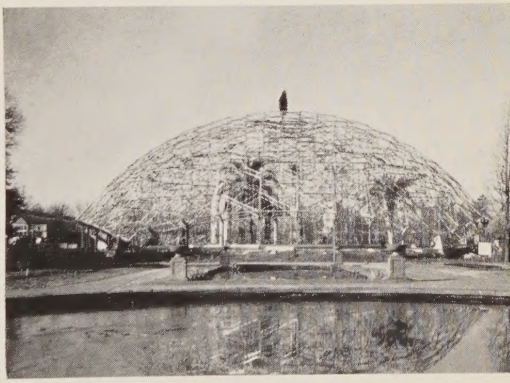
Many such problems were faced and solved, many inventive minds and skilled hands gave of their best in the succeeding months to bring the great experiment to actuality. Finally on Sunday evening, October 1, 1960, with a distinguished audience of leading scientists, government officials, industrialists and many other friends of the Garden in attendance, the Climatron was dedicated to American Science, to the people of America, and especially to St. Louisans. In an impressive ceremony, the powerful lights (over 100,000 watts total) were turned on, the great dome came alive like some wonder of the future, and the doors were opened to the public.

The following pages illustrate steps in the shift from the old to the new tropical conservatory.









With regret and a bit of nostalgia in our hearts we saw the old Palm House go, but soon the same hearts swelled with pride as the traditional evergreen was set atop the new structure signifying its completion without accident.

THE FIRST FLOWER OF OUR DAWN REDWOOD

GRACEFULLY lining the walk south of the Shaw House are nine dawn redwoods *(Metasequoia glyptostroboides)* the most recently discovered of cone-bearing genera. Until 1941 this handsome tree remained unknown to science, and then a Japanese botanist, studying some fossil remains of cypresses and redwoods, recognized some very distinct specimens to which he applied the name *Metasequoia.* These plants were first known only as fossils, survivals of a bygone era when monstrous reptiles dominated the landscape. In the same year that the fossil remains first came to be recognized and described as *Metasequoia,* a botanist in a secluded region in central China noted a peculiar tree, locally called "shui-sha," which later proved to be the dawn redwood, but it was not until 1946 that any reference to this plant was published. Only in 1948 did it become absolutely established that the "shui-sha" was a *Metasequoia,* heretofore known only as a fossil.

Botanists from all corners of the earth were excited by this startling discovery of another "living fossil," comparable in horticultural and botanical significance to the maidenhair tree *(Ginkgo biloba)*, also a native of the orient. Fortunately we are endowed with an ample collection of these two living fossils. To many people, the

designation *living fossil* is at best a vagary, and perhaps the term, so often encountered in botanical discussions, should be elucidated. In its strict sense, a fossil is defined as a trace impression or a cast of an organism from past geological ages, and evidently such a definition would exclude life from the fossil. By *living fossil* however, we mean, in the case of the maidenhair tree, the sole representative species of a once large and diverse assemblage of species, which reached their zenith when mammals were first making their appearance on the evolutionary scene, well over a hundred million years ago. Today the maidenhair tree is the only trace of that vast group of plants, and although the tree is now widely distributed, it is questionable whether or not the plant can be found growing out of cultivation, even in Japan and China, where priests first introduced it into cultivation about their temples. The dawn redwood deserves the title of living fossil on somewhat different grounds, for when this plant was first recognized, it was solely known from fossils, and the living representatives were only later to be discovered. This year at Shaw's Garden for the first time we have flowers on a tree that less than twenty years ago was presumed to be extinct, a timely reminder that the frontiers of botany are far from exhausted.

After the revolutionary discovery of the living dawn redwood, Dr. E. D. Merrill, with the aid of a grant from the Arnold Arboretum and the able cooperation of some Chinese biologists, succeeded in importing numerous seeds to this country. Between 1947 and 1948 these were disseminated to the more important botanical gardens of many nations. Our seeds were received from Dr. Merrill in one of the initial shipments, and today, after only twelve years, our trees, some nearly thirty feet tall, are quite majestic, and certainly give reason for the widespread popularity that has become affixed to this, one of the most rapidly growing conifers. Now the tree has worldwide distribution, just as the maidenhair tree, and it is proving to be quite as popular in horticultural circles. The dawn redwood grows even more rapidly than our bald cypress *(Taxodium distichum)*, and assumes, under most circumstances, a stately conical shape. The leaves are deciduous as in the bald cypress, in contrast to most conifer leaves, and form graceful verdant sprays, flattened as those of the arbor vitae. The dawn

Young female cones of the *Metasequoia*

redwood and the bald cypress share the peculiarity of shedding the entire spray, which is a branchlet with several leaves, rather than the individual leaves, as in most deciduous trees.

By 1958 flowers had been reported on a few trees scattered over the country. In all cases however, the trees, which at maturity are supposed to bear both male and female flowers, were reported to bear only female flowers. In late April of this year I first noticed the young and unopened female flowers on some of our dawn redwoods, but I too was unable to locate any male flowers. At the present writing in the dog days of August, the female flowers are only about twice as large as they were in spring. These flowers, usually called cones by botanists, are borne singly toward the end of some of the branches. The top-shaped cones have a blue-gray cast, reminiscent of the waxy coating of a cedar "berry." Each cone consists of several drastically modified leaves called bracts, which little resemble the foliage leaves. On the upper surface of each bract are borne about eight ovules. In early May these bracts are fleshy and so closely overlapping that it seems rather improbable that pollen could sift through to ultimately fertilize the ovules, even if there were male cones around to furnish the pollen. Presumably, elongation of the cone axis would separate the bracts sufficiently to allow the passage of the wind and the pollen it bears. But this year, here and probably elsewhere in the United States, there was no pollen of the dawn redwood in the breeze, for male cones remain unreported in America. Consequently there will be no seed harvest this year, for the ovules remain unfertilized. It is fortunate indeed that the tree can be propagated by cuttings. We have met with moderate success in establishing cuttings, but under rather exacting conditions. Perhaps in a year or so, our trees will bear male flowers for the first time, and we will witness the first seed production of the dawn redwood at Shaw's Garden.

A short stroll due south of the Shaw House will reveal the full beauty of the tree before it sheds its branchlets for winter. On leaving the Shaw House, the walk goes through a lane of dawn redwoods and then ends at the bases of a staunch pair of bald cypresses. But don't fall victim to the fallacy which befell me when I first saw the dawn redwood; I mistook it for a cypress. If you compare the two for yourself however, you will always know the difference between two of our most beautiful conifers.

JIM DUKE

ORCHID POTTING MEDIA

THE Missouri Botanical Garden in 1928 began a series of extensive experiments under the direction of Dr. David Fairburn on orchid hydroponics (soilless plant culture). These studies have added greatly to our knowledge of orchid culture and it would seem beneficial at this time to review this work in an effort to help clarify the present confusion concerning orchid potting media.*

One of the most important conclu-

sions that may be drawn from the Garden's hydroponics work is that orchids can be grown well in almost any medium provided that all the factors essential to growth and development are present and in proper proportions to each other. What these essential factors are and how they can best be supplied to an epiphytic orchid may be more readily understood by describing a hypothetically perfect potting medium for these plants.

Characteristics of an Ideal Orchid Potting Medium

An ideal orchid potting medium would have the following features:

1. Open, well drained physical structure.
2. Acid, pH from 5 to 6.
3. Nutrients of proper type and amount to support plant growth for an indeterminate period.
4. Resistance to decay and physical decomposition.
5. Buffering qualities to prevent rapid fluctuations in salt concentration and pH.
6. Obtainable at moderate price and in adequate quantities.
7. Easy to manipulate and requiring little skill or training to use.
8. Free of toxic elements.

During the past fifty years the Missouri Botanical Garden has used three different types of potting media: osmunda (fern root), gravel (or haydite) and fir bark. In the following chart each of these materials is compared with the hypothetically ideal potting medium.

As the chart indicates, none of the listed materials have all of the features which an an orchidologist would desire in an ideal potting medium. The osmunda is expensive, and difficult to use. Furthermore, an orchid potter can pot four plants in fir bark or gravel in the same time it would take to pot one plant in osmunda. Gravel (torpedo grade) has proven to be an excellent potting medium. Its deficiencies are lack of nutrients, no buffering qualities and excessive weight. Plants potted in gravel weigh approximately twice what similar sized plants weigh in fir bark. Fir bark is also lacking in nutrients and, of course, is more expensive than gravel.

Comparison Chart

Desired Qualities	*Osmunda*	*Gravel*	*Fir Bark*
Water drainage	Early stages—good later stages—poor	Very good	Course grades good
Acidity	pH 5	Usually neutral	pH 4–5 changes little
Nutrients	Sufficient for 18 to 24 months	None	Very little
Decomposition	Varies with type, 18–24 months	None	Varies with type, 1–3 years
Buffering qualities	Good	Very little	Moderate
Cost	Expensive	Very cheap	Moderate
Toxic elements	None	None	None

Constant Level Feeding

Originally the deficiencies in fir bark were overcome by adding organic fertilizers which release small amounts of soluble nutrients over a long period of time. Periodic applications of an inorganic water soluble fertilizer were also made. More recently the Garden has changed its fertilizer program to a constant level-micro nutrient system. Under this method a complete water soluble liquid fertilizer is injected into the water line so as to produce a 1 to 2 parts per million concentration each of nitrogen, potassium and phosphorus in the water being applied to the plants. This fertilizer level is constant and present whenever water is used. The constant level-micro nutrient feeding program overcomes two of the basic faults found in the previous fertilizing system. It eliminates the guesswork that is inherent in the use of all organic fertilizers. Organics are in a constant state of decomposition and it is impossible to estimate exactly how much soluble nutrients they are releasing for plant use and exactly when they are available or when they have decomposed to a point where they are no longer useful. Under the constant level-micro nutrient program, a grower knows that every time water is applied to a plant, the plant has available a certain predetermined concentration of fertilizer. The previous systems of fertilizing called for a monthly or semi-monthly application of nutrients. These solutions were relatively high concentrations and completely water soluble. Under this program the plants received periodically a heavy dose of highly concentrated fertilizer which was soon leached from the potting medium by subsequent nutrient-free waterings. Horticulturists realize that plants do not take up nutrients in periodic large doses, but rather they supply their nutritional needs by taking up small quantities continuously, much as the human body takes a series of small but complete meals each day.

Potting Medium Experiment

The orchid department in April 1959, at the suggestion of Dr. Frits W. Went, set up an experiment to test several types of orchid potting media. A block of hybrid white Cattleyas (Mrs. John S. Lehmann) was divided into 4 groups of 50 plants each. Group I was potted in a standard fir bark mix containing organic and inorganic fertilizer additives. This is the Garden's standard potting mixture (see M.B.G. Bulletin No. 2 Feb. 1959). Group II was potted in straight fir bark as it came from the bag. Group III was potted in a mixture of ½ fir bark and ½ torpedo gravel, and Group IV was potted in pure torpedo gravel. Groups II, III and IV were fed twice a week with a water soluble fertilizer solution (Earhart Lab. fertilizer solution, see Went, "Experimental Control of Plant Growth" pp 78–79). Group I was given a monthly application of the same fertilizer. These plants have now been receiving the described treatments for 18 months and none of the groups show any distinguishing differences in vigor, root growth, or flower qualities. The plants in pure torpedo gravel are as vigorous and as floriferous as any of the other groups.

Cattleya elongata showing increase in bulb size on current growth.

Cattleya Mrs. John S. Lehmann illustrating extensive root system developed while growing in gravel.

The remainder of the Garden's orchid collection has been receiving the constant level-micro nutrient feeding program for about five months. As a whole the collection seems to be in excellent cultural condition. Whether the new fertilizing program is responsible for this improvement is speculative as many other factors must be considered. It will take from one to two years before this new fertilizing program can be completely and finally evaluated. The illustration of a plant *Cattleya elongata* demonstrates how some of the plants in the collection have been stepped-up in bulb growth and vigor in the past growing season. The second illustration shows similarly how root growth has been stimulated.

R. J. G.

*Vol. XL No. 6 (June 1952) of the MISSOURI BOTANICAL GARDEN BULLETIN is devoted to this work. This issue of the BULLETIN is out of print, but copies are usually available at most biology libraries.

THE PELLITORY PROBLEM

WHEN I moved into the Cleveland Avenue gatehouse in 1952, there was a gracefully branched little plant that I did not know in one of the flower beds, though I had a vague memory of having seen it before in wooded areas. When it came up luxuriantly the following spring, I let it stay, thinking it might be of some ornamental value. By early summer

it was a little over a foot high. Tiny greenish flowers, clustered at the base of the leaves, gave it such a weedy look that I pulled it all up and threw it on the compost heap. Ever since that time it has been one of the commonest weeds in my garden, though not until recently did I get around to finding out what it was.

It proves to be a pellitory, *Parietaria pensylvanica*, a common plant in wooded and rocky places from Maine to Florida, westwards to Minnesota and Texas. The scientific name (*paries* being Latin for wall) comes from the ancient Latin name for the pellitory of Europe which is frequently found growing on old walls. Though there are no previous reports of *Parietaria pensylvanica* growing as a wall plant it does indeed do so at the Missouri Botanical Garden, not only at the base of Henry Shaw's old wall along Tower Grove Avenue but there are even little tufts in crevices between some of the stones.

If one is to have a weed in the garden, there couldn't be a nicer one. It is a graceful plant, seldom over a foot high and though when mature it can branch out into quite a bush, it is never at all rampant. It is not hard to destroy, once one has seen it, but it has a characteristic way of getting started down behind other plants and not showing up until it is pretty well grown. I know of no weed which is easier to pull up. The delicate little stems are tough and fibrous; if one pulls gently but firmly he nearly always gets the entire plant, roots and all. Frequently this will include several other branches in addition to the ones which the eye had already spotted. The leaves and stem seem almost to cling to the fingers. Under the microscope it is readily seen that they are clothed in tiny little greenish-white hairs which are hooked. They are just strong enough so that one can demonstrate their presence by pulling off a leaf and pressing its lower side against his clothing, where it will remain until it is pulled off, coming loose with a sharp little tearing noise as hundreds of tiny hooks release their hold. It clings just enough to be interesting, not enough to be a nuisance.

All in all it is a gentle little plant, as weeds go, and not at all ugly or coarse. Yet it is a heavy seeder and it does persist, particularly in a garden of perennials. One can pull out every plant of pellitory in sight and ten days later a whole new crop will have come up through the violets or out from under the barberry hedge.

Having made the official acquaintance of *Parietaria pensylvanica* (the pensylvanica, with one *n*, is correct, since it was so spelled by Gotthilf Henry Ernest Muhlenberg who first named the species), I looked it up in various floras and manuals and in the herbarium, revealing thereby that there is a pellitory problem. Not every one of the several score specimens in the herbarium is accompanied by any information but a majority of them are so annotated and on not a one is there any indication of pellitory as a weed. "In rocky woods," "at the base of a cliff," "in low sandy woods" are the commonest remarks, though it is reported from a sand bar in Texas and from a gravelly beach in Maine.

The floras and manuals tell the same story. Steyermark, in his Spring Flora of Missouri, says it is found throughout the state in "Open or rocky woods, bluffs, thickets, glades, and moist open ground." It is not listed in the U.S.D.A. publication, Weeds of the Central States. Shinners in his Spring Flora of the Dallas Region, worked out meticulously the way in which *Parietaria pensylvanica* grades into the hairer *P. pensylvanica obtusa*, but does not list it as a weed. The late C. C. Deam took a special interest in weeds and I turned to his Flora of Indiana expectantly but found no mention of weedy pellitories.

One likely hypothesis might be that a special weedy strain has just recently been spreading into this area. This may be so, but careful study in the herbarium produced no evidence for such an hypothesis. I pulled up a good selection of pellitories from my garden and examined them under the microscope for such technical details as the proportionate length of the bracts, the frequency and kinds of hairs on stems and leaves, the shapes and sizes of the leaves. If they do indeed belong to a weedy race which is just beginning to appear in this area, they bear no outward sign of it, that I could find.

From Hugh Cutler, I learned that he had made the acquaintance of the pellitory when he lived on Shaw Place. He knew how common it was becoming in this part of St. Louis and had learned that it was not listed as a weed. The mystery remains. Has our American pellitory been weedy for years but its weediness ignored by botanists? Is it as weedy elsewhere as in this part of St. Louis? Has it been common even here for a long time without our noticing it? Or are Hugh Cutler and I correct in guessing that a weedy strain of pellitory has recently come into St. Louis gardens? E. A.

TRUMPET CREEPER

Several years ago a specimen of the beautiful trumpet creeper, *Mme. Galen*, was planted at the base of a gatepost in the rear of Mr. Shaw's old country residence, *Tower Grove*. This year it has been in full flower throughout July and August and has attracted much attention. This variety, the most beautiful of all the trumpet creepers, is a descendant of a hybrid between the common American trumpet creeper and the Chinese species. It combines the best features of both species, being somewhat less weedy than the American, yet with more winter hardiness than the Chinese. Compared with our American trumpet creeper it has larger, more open flowers, in more graceful, open clusters. In color it is a brighter and yet more delicate blend of red and orange shades. It is indeed a handsome plant and we are happy to have a good specimen of it. E. A.

WOMEN'S ASSOCIATION

MEMBERS of the Garden's Women's Association have raised more than $19,000 during the past year for the Second Century Expansion and Redevelopment Program of Shaw's Garden.

Mrs. W. Warren Kirkbride, President of the Association, acknowledged in announcing the contribution, the devoted support of Garden Clubs and Friends of the Garden members in the St. Louis area. With their help, two large public benefits were staged: During the nine-day centennial festival last fall the women opened sales booths offering a wide variety of garden supplies, "white elephants," plant materials and other items of interest to garden lovers. In the spring, through the cooperation of Famous-Barr Company, a plant and garden supply sale called "Through the Garden Gate," was held in a gaily decorated part of Famous-Barr's Clayton store parking lot. A sidewalk cafe featuring herb dishes, a garden advice booth, a "touch of elegance" booth and many others made "Through the Garden Gate" so popular that it sold out well ahead of schedule.

During the winter brightly decorated tiny hats were mailed to nearly 200 Women's Association members with a poem suggesting it was time to "Pass the Hat." This private solicitation brought the total funds realized from the Association's activities to well over $19,000.

Plans are now being completed for the second annual "Through the Garden Gate" event next May. Mrs. Bert A. Lynch, Jr., and Mrs. Arthur Feuerbacher are co-chairmen, and the St. Louis Herb Society will participate in next spring's activity, making the herb booth one of the outstanding features.

Checks representing more than $19,000, raised during the past year by the Women's Association of the Missouri Botanical (Shaw's) Garden, are presented by association president, Mrs. W. Warren Kirkbride, to Dr. Frits W. Went, Director. Funds earmarked for the Garden's improvement program came from sales activities during the Garden's centennial celebration last autumn and other benefits during the year.

FRIENDS OF THE GARDEN

An executive board for Friends of the Garden was appointed during the summer by Robert Brookings Smith, president of the Garden's trustees, who named John R. Averill and Mrs. William R. Bascom, president and vice-president respectively of the Friends organization.

Harry W. Wuertenbaecher, Jr., is committee chairman for membership activities, with Mrs. Curtis Ford and William W. Spivy as vice-chairmen for membership. The new executive board is now completing plans for a "personal touch" campaign to increase Friends' membership early in the fall.

This is the first time a formal executive board has existed for the 20-year-old Friends group. In addition to the membership project, the new board will sponsor various organizational activities and seek ways to increase public awareness of and interest in Shaw's Garden, Averill announced.

Other members of the new board are: Mrs. Henry Belz, George H. Capps, Mrs. John R. Caulk, Jr., Mrs. Rhodes E. Cave, E. R. Culver, III, Mrs. Con P. Curran, Mrs. Dudley F. Giberson, Miss Elizabeth Golterman, George T. Guernsey, III, Mrs. W. Warren Kirkbride, Edward L. Kuhs, Mr. and Mrs. Sears Lehmann, Jr., Benjamin M. Loeb, James H. Lum, Mrs. Bert A. Lynch, John Peters MacCarthy, Mrs. James S. McDonnell, Mrs. Carl F. G. Meyer, Mrs. Edward A. Reisse, Mrs. Gilbert J. Samuelson, Mrs. Edward F. Schweich, Mrs. James A. Seddon, Jacob Van Dyke and Mrs. Felix N. Williams.

Three new members of the Friends of the Garden executive board met at the Garden in August to make plans for increasing membership. Shown here are Harry Wuertenbaecher, Jr., (right) chairman for membership, Mrs. Curtis Ford and William W. Spivy, vice-chairmen for membership.

RECENT VISITORS TO THE GARDEN

Sir Harold Caccia, British Ambassador to the United States, (center) is greeted at the Shaw's House entrance during his visit to St. Louis in June. Robert Brookings Smith, Garden board chairman, (right) and Dr. Frits W. Went, Director, gave Sir Harold a tour of the Garden after which the Historical Committee entertained him at a reception in the Shaw House. Sir Harold recalled Henry Shaw's English origin and the close ties he maintained with friends at the Royal Botanic Gardens at Kew who supplied Shaw with aid and encouragement when he set out to establish a Botanical Garden in St. Louis.

In the back parlor of the Henry Shaw Country House Mrs. Richard M. Nixon in honor of her twentieth wedding anniversary has just been presented with an orchid by Mrs. Edwin R. Culver, Jr., of the Garden's Historical Committee, and Leicester B. Faust, First Vice President of the Board of Trustees. A cluster of press and television men filled the room which was ablaze with spotlights and flash bulbs.

SYSTEMATICS SYMPOSIUM AT THE GARDEN IN OCTOBER

THE Seventh Annual Symposium on Systematics will be held at the Garden on the 14th and 15th of October. The title of this year's symposium is to be "Tools of Taxonomy." The Symposium, held annually in October for the past six years, is supported by a grant from the National Science Foundation. About 200 biologists and students are expected to attend, largely from the central United States. There will be a smoker and registration on Friday, from 7:00 to 10:00 P. M., and the symposium proper will be held on Saturday. Dr. E. Raymond Hall, of the University of Kansas, will be the Zoology Chairman, and Dr. Robert E. Woodson will be the Botany Chairman. The speakers will be Dr. Robert T. Hatt, Cranbrook Institute of Science; Mr. Paul C. Hutchison, University of California Botanical Garden; Dr. A. C. Smith, U. S. National Museum; Dr. Frits W. Went, Missouri Botanical Garden; and Dr. Marshall R. Wheeler, University of Texas.

For further information contact Dr. Robert L. Dressler, Missouri Botanical Garden.

MISSOURI BOTANICAL GARDEN PROGRAMS

SPECIAL Shows and Displays:
Midwestern Regional Budgie Show, October 7, 8, and 9.

Systematics Symposium, October 15 and 16.

Chrysanthemum Show, November 6 through December 4.

Free Nature Programs for Children, aged seven and over, are held every Saturday morning from 10:00 to 11:30 A. M. in the Museum Building. Program for October and November:

From Dust to Seeds	October 1
Fall's Carnival	8
Fall's Frolic	15
Planting Bulbs	22
(you may take your bulbs home)	
Witch's Brew	29
Color Sound Movies	November 5
The Rise of Forests	12
Woodlands of America I	19
Woodlands of America II	26

COURSES

The following courses are open to any interested person. Certificates are awarded upon the successful completion of any course.

Information on registration may be obtained by calling

PRospect 6-5567

Please send all registration fees to

Missouri Botanical Garden
2315 Tower Grove Avenue
St. Louis 10, Missouri

Registration fees cannot be refunded after the last day of registration for any particular course.

The courses will meet in the classroom of the Garden's Museum Building.

COURSE 107

Botany for Home Gardeners

Place: Museum Bldg.

Time: Five Monday nights, 7:30 to 9:30 P. M. Starting November 14.

Fee: $15 for the five sessions.

The course emphasizes basic structure of both herbaceous and woody plants, the nature of changes which adapt plant parts to particular situations, seed structure and germination of both monocotyledonous and dicotyledonous plants and familiarization with chromosomes, cell division and sex cell formation. The course will be taught as a laboratory-discussion, and will be built around fundamental observations essential to intelligent understanding and growing of plants. No previous knowledge of plants is required.

Open to all persons of any age seriously interested in plants.

Instructor: Dr. Norton H. Nickerson.

COURSE 127

Bulb Forcing

Place: Museum Bldg.

Time: (Register for only ONE of the sections offered.)

Tuesday, October 11, 7:00 to 9:30 P. M.

Thursday, October 13, 9:00 to 11:30 A. M.

Friday, October 14, 1:00 to 3:30 P. M.

Tuesday, October 18, 9:00 to 11:30 A. M.

Wednesday, October 19, 1:00 to 3:30 P. M.

Fee: $8 for one meeting.

Enrollment: Each section is limited to 25 students.

The meeting will consist of a short lecture followed by a student practice session.

The lecturer will give instructions on bulb forcing and outdoor bulb culture. During the practice session, each student will plant at least 24 top quality bulbs (tulips, narcissi, paperwhites and hyacinths) in five 7-inch bulb pans. All materials are provided by the Garden. The planted bulbs will be kept under cold treatment in the Garden bulb pit and greenhouses until ready to flower (60–80 days). Each student will be notified when to call for his or her bulbs. This course is intended primarily for beginners.

Instructors: Mr. Clarence Barbre, Mr. Kenneth Peck.

COURSE 128

Modern Horticulture for Home Gardeners II

Place: Museum Bldg.

Time: Five Tuesday nights, 7:30 to 9:30 P. M. Starting November 1.

Fee: $15 for the five meetings.

Complements Course 123 but may be taken independently. Subject matter includes background knowledge essential to really successful growing of many types of plants. An orderly survey of environmental factors which affect plant growth and how the home gardener can manipulate these factors to achieve good growing results. Soil testing and what to do to improve soil conditions found on your property, plant propagation and plant diseases will be included. Each evening will feature both practical and classroom work. Students may take home plant material at end of each meeting.

Instructor: Mr. Robert J. Gillespie.

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AN IMPORTANT MESSAGE TO

Friends of the Garden

Major financial support for the Garden's Second Century Redevelopment Program depends in part upon tripling membership in the Friends, as evidence of community interest. If this is accomplished, the Redevelopment Program can move ahead without delay. Thus each new member has greatly added importance at this time and the Friends have a unique opportunity to provide the most significant help to the Garden in its long history.

If every Friend of the Garden would find one additional member, the 1960-61 membership goal of 7,500 Friends could be more than three fourths met and very substantial funds gained for Shaw's Garden.

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For information and membership blanks call or write

FRIENDS OF THE GARDEN
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